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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/690,755	10/18/2000	Makoto Sugizaki	Q61275	2280

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EXAMINER	
LEE, TOMMY D	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 01/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/690,755	SUGIZAKI, MAKOTO	
	Examiner	Art Unit	
	Thomas D. Lee	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) *17-26* is/are withdrawn from consideration.

5)☒ Claim(s) *13 and 14* is/are allowed.

6)☒ Claim(s) *1-4 and 9-12* is/are rejected.

7)☒ Claim(s) *5-8,15 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office action is responsive to applicant's amendment filed August 17, 2004. Claims 1-26 are pending.

Election/Restrictions

2. Newly submitted claims 17-26 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The above claims are directed to generation of a super cell halftone pattern comprised of a plurality of patterns generated from an original basic pattern, while original claims 1-13 are directed to halftone dot processing wherein a dot percentage wherein mutually contacting dot patterns first appear is different from a dot percentage wherein all adjacent dot patterns contact one another.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 17-26 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-4 and 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,507,685 (Kawamura).

Regarding claim 1, Kawamura discloses an image processing method of performing a halftone dot processing in which first image data representative of pixel values of a plurality of pixels constituting an image is converted into second image data representative of dot patterns of halftone dots, wherein said image processing method performs the halftone dot processing in which a first dot% of dot patterns, wherein mutually contacting dot patterns first appear with respect to an identical direction on the image, in the event that the halftone dot processing is repeatedly performed while pixel values of pixels on an image comprising a plurality of pixels all of which are same in pixel value are sequentially varied from a lower density end to a higher density end uniformly, is different from a second dot% of dot patterns wherein all the dot patterns, which are adjacent to one another with respect to the identical direction (Noting Attachment A, which shows Fig. 11A of Kawamura, dot patterns corresponding to a first dot% of 5/16, or 31.25% are formed. Locations where adjacent dot patterns first contact each other with respect to an identical direction (approx. 14 degrees) are circled in red. Next, noting Attachment B, which shows dot patterns corresponding to a second dot% of 9/16, or 56.25%, all of the adjacent dot patterns are in contact with one another with respect to the identical direction.).

Regarding claim 2, said halftone dot processing is a process for comparing pixel values of pixels on an image represented by the first image data with thresholds of a halftone pattern comprising an arrangement of thresholds, which are mutually superimposed, in the event that the halftone pattern is superimposed on the image, to convert the pixel values of the respective pixels on the image into binary values or multi-

values more than the binary values (column 5, lines 35-52), and said halftone dot processing is performed using a halftone pattern in which thresholds are adjusted in such a manner that the first dot% regarding a same direction on the image is different from the second dot% (as mentioned above with respect to claim 1), said halftone pattern being concerned with such a pattern that when a dot cell associated with one halftone dot is regarded as a unit, there are arranged a plurality of sorts of dot cells in which at least part of the thresholds arranged on the dot cells are relatively different from pixel values on an image area on which the dot cells are superimposed (threshold data from threshold matrix may be greater or less than corresponding output data (column 5, lines 42-45)).

Regarding claim 3, said halftone dot processing is performed in such a manner that the first dot% of dot patterns, wherein mutually contacting dot patterns first appear with respect to an identical direction on the image, in the event that the halftone dot processing is repeatedly performed while pixel values of pixels on an image comprising a plurality of pixels all of which are the same in pixel value are sequentially varied from a lower density end to a higher density end uniformly, is different from the second dot% of dot patterns wherein all the dot patterns, which are adjacent to one another with respect to the identical direction (as mentioned above with respect to claim 1), and further the first dot%-to-first dot% with respect to the mutually different direction, and the second dot%-to-second dot% with respect to the mutually different direction are mutually different, respectively (Noting Attachment A, the first dot% is 31.25%, as mentioned above. Next, note that Attachment C, dot patterns corresponding to a first

dot% of 6/16, or 37.5%, with respect to a mutually different direction (orthogonal with respect to the first direction) are formed. Locations where adjacent dot patterns first contact each other with respect to the mutually different direction are circled in red. Regarding the second dot%, Attachment B shows a second dot% of 9/16, or 56.25%, as mentioned above. Next, noting Attachment D, dot patterns corresponding to a second dot% of 10/16, or 62.5%, with respect to the mutually different direction are formed, where all of the adjacent dot patterns are in contact with one another with respect to the mutually different direction.).

Regarding claim 4, said halftone dot processing is a process for comparing pixel values of pixels on an image represented by the first image data with thresholds of a halftone pattern comprising an arrangement of thresholds, which are mutually superimposed, in the event that the halftone pattern is superimposed on the image, to convert the pixel values of the respective pixels on the image into binary values or multi-values more than the binary values (column 5, lines 35-52), and said halftone dot processing is performed using a halftone pattern in which thresholds are adjusted in such a manner that the first dot%-to-first dot% with respect to the mutually different direction, and the second dot%-to-second dot% with respect to the mutually different direction are mutually different, respectively (as mentioned above with respect to claim 3), said halftone pattern being concerned with such a pattern that when a dot cell associated with one halftone dot is regarded as a unit, there are arranged a plurality of sorts of dot cells in which at least part of thresholds arranged on the dot cells are

relatively different from pixel values on an image area on which the dot cells are superimposed (as mentioned above with respect to claim 2).

Regarding claims 9 and 10, said halftone dot processing is performed using a halftone pattern in which there are arranged a plurality of sorts of dot cells wherein there are arranged thresholds which are relatively adjusted to pixel values of the image area to be superimposed in such a manner that a difference between minimum dot% of the first dot% regarding mutually different directions and maximum dot% of the second dot% regarding mutually different directions is not less than 1% (minimum dot% of first dot% equals 31.25% (Attachment A), maximum dot% of second dot% equals 62.5% (Attachment D)).

Regarding claim 11, Kawamura discloses an image processing apparatus for performing a halftone dot processing in which first image data representative of pixel values of a plurality of pixels constituting an image is converted into second image data representative of dot patterns of halftone dots, said image processing apparatus comprising: a data conversion unit for comparing pixel values of pixels on an image represented by said first image data with a threshold of halftone patterns comprising an arrangement of thresholds, which are mutually superimposed, in the event that the halftone patterns are superimposed on the image, to convert the pixel values of the respective pixels on the image into multi-values not less than binary values, so that the second image data representative of dot patterns of the respective halftone dots is produced (column 5, lines 35-52); and a halftone pattern storage unit for storing the halftone patterns in which thresholds are adjusted so as to obtain dot patterns wherein a

first dot% of dot patterns, wherein mutually contacting dot patterns first appear with respect to the same direction on the image, in the event that the halftone pattern is combined with such a halftone pattern that when a dot cell associated with one halftone dot is regarded as a unit, there are arranged a plurality of sorts of dot cells in which at least part of thresholds arranged on the dot cell is different from among dot cells (Fig. 11A shows 16 4x4 dot cells, where the arrangement of threshold values is different for a plurality of cells), and in addition in the event that the data conversion unit repeatedly performs the data conversion processing, using the halftone patterns, while the pixel values of the pixels on the image comprising a plurality of pixels all of which are same in pixel value are sequentially varied from the lower density end to the higher density end uniformly, is different from a second dot% of dot patterns wherein all the dot patterns, which are adjacent to one another with respect to the same direction, are in contact with one another (as mentioned above with respect to claim 1), wherein said data conversion unit performs the data conversion processing using the halftone patterns stored in said halftone pattern storage unit (column 5, lines 35-52).

Regarding claim 12, said halftone pattern storage unit stores the halftone patterns in which thresholds are adjusted so as to obtain dot patterns wherein a first dot% of dot patterns, wherein mutually contacting dot patterns first appear with respect to the same direction on the image, in the event that the halftone pattern is concerned with such a halftone pattern that when a dot cell associated with one halftone dot is regarded as a unit, there are arranged a plurality of sorts of dot cells in which at least part of thresholds arranged on the dot cell is different from among dot cells (as

mentioned above with respect to claim 11), and in addition in the event that the data conversion unit repeatedly performs the data conversion processing, using the halftone patterns, while the pixel values of the pixels on the image comprising a plurality of pixels all of which are same in pixel value are sequentially varied from the lower density end to the higher density end uniformly, is different from a second dot% of dot patterns wherein all the dot patterns, which are adjacent to one another with respect to the same direction, are in contact with one another (as mentioned above with respect to claim 1), said halftone patterns being a pattern in which thresholds are adjusted in such a manner that mutually different dot patterns are obtained as to the first dot%-to-first dot% with respect to the mutually different direction (Attachments A and C show mutually different dot patterns), and to the second dot%-to-second dot% with respect to the mutually different direction (Attachments B and D show mutually different dot patterns).

Allowable Subject Matter

5. Claims 13 and 14 are allowed.

6. Claims 5-8, 15 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: No prior art has been found to disclose or suggest applicant's "data correction unit for performing an arithmetic operation between pixel values of pixels on an image represented by said first image data and correction values of a correction pattern comprising an arrangement of correction values, which are mutually superimposed, ..."

in combination with a data conversion unit as recited in base claim 13; or a step "wherein said halftone dot processing is performed using a halftone pattern in which there are arranged a plurality of sorts of dot cells for forming dot patterns, which are identical with one another in growth process with respect to the shape and are different form one another in degree of growth in at least part of mean dot% range, ..." as recited in dependent claims 5 and 6, and similarly recited in new dependent claims 15 and 16; or a step "wherein said halftone dot processing is performed using a halftone pattern in which there are arranged a plurality of sorts of dot cells for forming dot patterns, which grow while maintaining the same dot% and are mutually different with respect to the shape in at least part of mean dot% range, ..." as recited in dependent claims 7 and 8.

Response to Arguments

8. Applicant's arguments filed in response to the rejection of claims 1-4 and 9-12 under 35 U.S.C. 102(b) as set forth in the prior Office action have been fully considered but they are not persuasive.

Applicant asserts, at pages 16 and 17 of applicant's response, that in Fig. 11A of Kawamura, a difference between a first dot% and a second dot% as a result of varying density within the depicted region of the threshold value pattern "is created only due to the use of a small matrix, and a complete picture or larger matrix construction would show identically shaped screen dots susceptible to tone jumps during continuous shifts in image density." Thus applicant admits that, at least in the region depicted in Fig. 11A, applicant's invention as recited in the independent claims, reads on Kawamura. As for the use of a larger matrix construction, it should be noted that there is no

limitation in the claims specifically defining the size of matrix to be used in applicant's halftone processing.

Applicant further states on page 17 of applicant's response that the screen dots in Kawamura are not even identical to one another in dot%. Applicant states that some of the matrices shown in Fig. 11A are missing a certain threshold value while having two of another threshold value. This is believed to be merely a mistake in the placement of threshold values in the figure. As there are 320 locations in Fig. 11A for the placement of numbers representing threshold values, it is not at all surprising that a few of the numbers may be inadvertently duplicated or missed. As Kawamura merely shifts the start position for reading from inputs stored in memory for each threshold value matrix, it is clear that dot% of dot patterns are intended to be the same at any given density for each matrix.

Applicant asserts, on pages 17 and 18 of applicant's response, that mutual contact of patterns would appear at 2/16 instead of 5/16, as indicated in the prior Office action. However, this contact corresponds to the growth of a single dot, as opposed to the merging of two adjacent dots, which does not occur until a density of 5/16 is attained. Regardless of whether mutual contact of patterns first occurs at 2/16 or 5/16, applicant has not refuted the examiner's assertion that the density where all of the adjacent dot patterns begin to merge at 9/16, which is a different dot% from 2/16 or 5/16.

Applicant asserts, on page 18 of applicant's response, that the reference would have the same tone jumps as known fill patterns, and thus is different from the claimed

invention. However, any difference between the reference and the invention, as defined by applicant's claims, is not apparent. The reference, for the reasons set forth above, meets the limitations set forth in applicant's claims.

Applicant further asserts that in Kawamura, threshold values are shifted, as opposed to being adjusted as set forth in claim 2. However, any change in the threshold value at a given location within the threshold matrix corresponds to an adjustment at that location, and thus a shift of threshold values is a type of adjustment.

Applicant, on pages 19 and 20 of applicant's response, merely repeats the arguments set forth in the preceding pages. These arguments have been addressed above.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Lee whose telephone number is (703) 305-4870. The examiner can normally be reached on Monday-Friday (7:30-5:00), alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (703) 308-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas D. Lee
Primary Examiner
Art Unit 2624

tdl
January 5, 2005